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TROUT HABITAT DEVELOPMENT PROGRAM REVIEW REPORT -- Building on Tradition



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EXECUTIVE SUMMARY

A six-person DNR team assessed the Trout Habitat Development Program's management procedures and results after eight years of accelerated Trout Stamp funding. This report identifies program strengths and weaknesses -- and recommends improvements, so that Wisconsin's Trout Habitat Development Program, long recognized as one of the best nationwide, can be even better.

Between October 1985 and July 1986, the assessment team interviewed 38 DNR personnel from five districts and 11 areas. To their credit, all interviewees showed candor, positive attitudes, dedication to the program, and concern for the resource. The assessment team also inspected 24 habitat development projects. Representatives of Trout Unlimited (TU) and the Trout Study Committee (TSC) of the Conservation Congress were involved through meetings, letters, and project tours.

Overall, the Trout Habitat Development Program has been successful -- improving trout habitat, trout populations, and trout fishing in most cases. The following recommendations -- in "critical" and "important" action categories -- will fine tune the program and further the improvements.

CRITICAL PRIORITY

- * The FM Bureau's Coldwater Habitat Specialist (CHS) should oversee a committee to design and implement training programs that include field-oriented workshops and hands-on experience for continually updating habitat improvement methods statewide.

- * The Coldwater Research Group leader (CRG) and the CHS should update the Guidelines for Management of Trout Stream Habitat in Wisconsin (White and Brynildson 1976). Coldwater research should try to: 1) explain disparities among project results, 2) develop artificial spawning areas, 3) evaluate new habitat improvement techniques, 4) describe brook and brown trout interactions in developed waters, 5) determine optimum habitat development levels, and 6) assess habitat development potential on Class II and III streams.

- * Staff specialists and fisheries managers should: 1) intensively develop large, productive streams with natural reproduction that attract heavy fishing use, 2) use brushing and half-logs only on streams similar to those where such methods have been effective, 3) allocate more available funding to spring-pond dredging, 4) further develop and evaluate cost effective beaver control methods, and 5) continue developing innovative techniques, new and cheaper fencing techniques, and using low-cost native materials.

* Fisheries managers should do more thorough habitat development evaluations of less routine techniques that include creel surveys. They should expand evaluations in areas and on techniques that are insufficiently documented.

* The CHS should do a separate, detailed, statewide, cost-benefit analysis of representative projects and techniques.

* The CHS should oversee a committee to develop criteria enabling districts to rank projects for funding allocations.

IMPORTANT PRIORITY

* The Bureau of Finance should improve financial tracking in the areas of timeliness, accuracy, and closeouts.

* Fisheries managers should propose special regulations where excess fishing pressure may be reducing fishing quality in habitat-improved areas.

* Districts should more frequently share equipment and expertise.

* Heavy equipment for the La Crosse and Black River Falls areas should receive funding.

* The CHS and appropriate district supervisors should direct more funding to the La Crosse Area, and in the future to the Dodgeville and Black River Falls areas, if thorough evaluations of present and future projects are positive.

* The CHS should update the Fish Management Handbook and streamline planning forms.

* The CHS should clarify present Trout Stamp policies and pursue funding more activities with Trout Stamp revenues.

* All FM Bureau personnel should expand public information and education programs, work more closely with TU and the Conservation Congress, and improve internal communications.

* NWD should streamline permit processing for spring-pond dredging.

* Fisheries managers should encourage more habitat improvement on trout streams bordered by private lands.

* Trout Habitat Development Program funding should continue at present levels, in constant dollars, for at least 10 years.

INTRODUCTION

SCOPE

Wisconsin is a nationally recognized leader in trout habitat development. Since the Trout Stamp began in 1978 until January 1985, the Department has spent over \$3 million, improving 163 stream miles on 158 different waters.

This review assesses the Trout Habitat Development Program after eight years of Trout Stamp funding and makes management recommendations. Its main objectives are to evaluate:

- 1) program effectiveness and future direction -- summarizing the results of habitat work and making recommendations for the future.

- 2) program administration -- determining the effectiveness of program management and making recommendations for improvement.

This report summarizes the review conducted in five districts, October 1985 - July 1986.

REVIEW METHODS

The FM Bureau's 1985-87 biennial project planning prompted this report. Based on discussions with FM Bureau staff, district supervisors, and staff from other affected bureaus (including Management and Budget, Water Regulation and Zoning, Water Resources Management, and Information and Education), Larry Claggett, program leader, recommended review objectives, an outline of subjects, and an assessment team.

The assessment team represented diverse fisheries backgrounds and areas of expertise. Its members were: Larry Claggett, Coldwater Fisheries Staff Specialist, FM Bureau; Bob Hunt, Coldwater Group Leader, Bureau of Research; Gordon Priegel, Fisheries Supervisor, Southern District; Max Johnson, Fisheries Manager, Antigo; Rick Cornelius, Fisheries Manager, Barron; and Terry Hupf, Supervisor, Wild Rose Habitat Management Station.

The assessment team met in September 1985. They determined review objectives and subjects; developed interview questions for district supervisors, fisheries managers, and technicians; and planned to visit three districts and two areas/district. Later, the review expanded to cover five districts, based on district supervisor recommendations.

Between October 1985 and July 1986, the assessment team visited five districts and 11 areas, interviewed 38 DNR personnel, and field-inspected 24 projects (Fig. 1).

Figure 1. The Trout Habitat Development Program assessment team inspecting a project on the South Branch of the Oconto River.



Project evaluation results, from all field fisheries managers, were compiled for publication as DNR Technical Bulletin 162 (Hunt 1988). This review report is based on that summary of project evaluations, field inspections, and interviews. The conclusions are based on interviews and the assessment team's collective knowledge of the program.

Public participation came through meetings, letters, and project inspections. The Trout Unlimited (TU) State Council met with the assessment team to discuss the Trout Habitat Development Program. A similar meeting planned with the Trout Study Committee (TSC) of the Conservation Congress was canceled due to Congress budget problems, but several TSC members submitted written comments. Both TU and TSC were invited to send representatives on field tours -- two TU members joined in (Bob Heding, LMD, and Lowell Gennrich, SD).

RESULTS

PERSONNEL COMMENDATIONS

Participants were open and candid during discussions, expressing positive attitudes and strong dedication to the program and the resource. Technicians deserve special recognition for positive attitudes, knowledge, and high quality work.

PROGRAM STRENGTHS

- + The program is aggressive and action-oriented, yielding impressive physical improvements in trout habitat. (Physical improvements are measurable physical habitat factors that benefit trout -- such as stream width, depth, velocity, substrate, and cover.)
- + The projects show effective field work with appreciation for aesthetics.
- + The working relationships and communications among district personnel are effective and professional.
- + Fisheries managers and technicians are quick to try new techniques and identify innovative solutions to habitat problems.
- + Fisheries managers allow technicians to make on-site construction decisions.
- + The program has strong public support.
- + The projects effectively use volunteer help in the Oshkosh, Marinette, Dodgeville, and La Crosse areas.
- + All area offices keep thorough and detailed records of project plans, accomplishments, and finances.
- + Areas close to District Field Operations (DFO) headquarters effectively use DFO.
- + NWD and SD use cost-effective contracting.
- + The program effectively uses research findings.

PROGRAM WEAKNESSES

- Fisheries managers have completed few thorough fishery evaluations of some habitat improvement techniques such as riprap, brushing, half-logs, and synergistic combinations of techniques. Few evaluations have included creel surveys or used reference zones.
- The FM Bureau has not provided sufficient training in habitat improvement techniques for fisheries managers and technicians.
- The financial tracking system does not provide field personnel with timely and accurate reports that they can understand. Charges do not show on printouts within the next reporting period -- some charges never show up, and some projects are not closed out after fisheries managers submit the paperwork to district supervisors.

- The La Crosse Area lacks a Caterpillar tractor, and the Wisconsin Rapids Area lacks an all-terrain vehicle and backhoe. This equipment is vital to improvement efforts.
- Very few written guidelines or standards for habitat work exist. Inexperienced technicians would especially benefit from general standards to guide their work.
- Districts very seldom share equipment across district lines.
- The FM Bureau has not consolidated program policies.
- Some planning and reporting forms contain duplicate or unneeded information.
- TU and TSC believe they should be more informed about and involved in the program.
- Fisheries managers and technicians often record costs on field ledgers, making cost comparisons among areas difficult due to dissimilar entry categories.
- NWD typically takes over a year to process spring-pond dredging permits.
- Districts do not use comparable project ranking systems.
- Some staff specialists and fisheries managers disregard on-site supervision of projects.
- Some fisheries managers have inappropriately delegated project planning and evaluation to technicians.
- Some fisheries managers do not plan far enough ahead to reduce the impact of beginning the fiscal year midway through the field season.

ANALYSIS AND RECOMMENDATIONS

PROGRAM EFFECTIVENESS

The assessment team reviewed the Trout Habitat Development Program's effectiveness in providing more trout and better fishing opportunities in an aesthetically pleasing environment. Project evaluations considered the costs of different techniques, where various techniques worked, new techniques, research needs, and communications. Recommendations for future improvements are based on these evaluations.

Evaluations

Results. The 38 interviews and 45 field evaluations indicate that most projects have increased trout populations and greatly increased angler use and harvest. Generally, the more productive waters with good natural reproduction showed the best results -- most predictably with intensive development or fencing on streams where habitat is clearly limiting or degraded. Conversely, developing less fertile brook trout streams with poor natural reproduction proved least successful.

The La Crosse Area reported the most consistently positive results. However, results should perhaps be weighed against regional expectations.

Fisheries managers have conducted few really thorough project evaluations. Only 13 evaluations included both reference zones and treatment zones, and only three included creel surveys. Rock riprap and half-logs were evaluated on only two streams each.

Many projects initially seemed successful, but the Fish Management Handbook recommends a three- to five-year delay between project completion and evaluation.

Recommendations: Fisheries managers should reduce evaluations when they can accurately predict results. Most predictable are intensive development or fencing on streams with natural reproduction where habitat is clearly limiting or degraded. They should do thorough evaluations on waters where few evaluations exist, especially in the Dodgeville, Woodruff, and Brule areas. These evaluations should include creel surveys and a variety of techniques -- brushing, riprap, half-logs, fencing, and synergistic combinations of techniques. Thorough evaluations should also include reference zones, to improve experimental design, as well as physical and biological data collected before and after development.

Cost Effectiveness. Most areas the assessment team visited had detailed project costs, but the records were not consistent statewide. Even if summarized by technique, however, costs would vary with locale.

Fisheries managers cited the following benefits (many with no given dollar values) that should be included in cost analyses:

- * increased trout population -- measured per mile, including both fingerlings and large trout produced
- * increased fishing pressure, catch, and harvest
- * improved aesthetics
- * increased "fish-ability"
- * improved wildlife habitat
- * increased aquatic food supply
- * improved physical structure of the stream channel
- * increased fishing trip value
- * more public support of DNR programs
- * improved public attitude toward easements

Fisheries managers considered the following techniques as most cost effective, based on their experience:

- * fencing
- * brushing and brush bundles
- * riprap
- * beaver control
- * bank cover structures

Recommendations: The CHS, with help from an economist, should analyze the costs and benefits of specific projects and techniques. This would require comparable cost records. Therefore, the CHS, with help from the Bureau of Finance, should recommend cost-accounting standards. More creel surveys would better document benefits.

Techniques

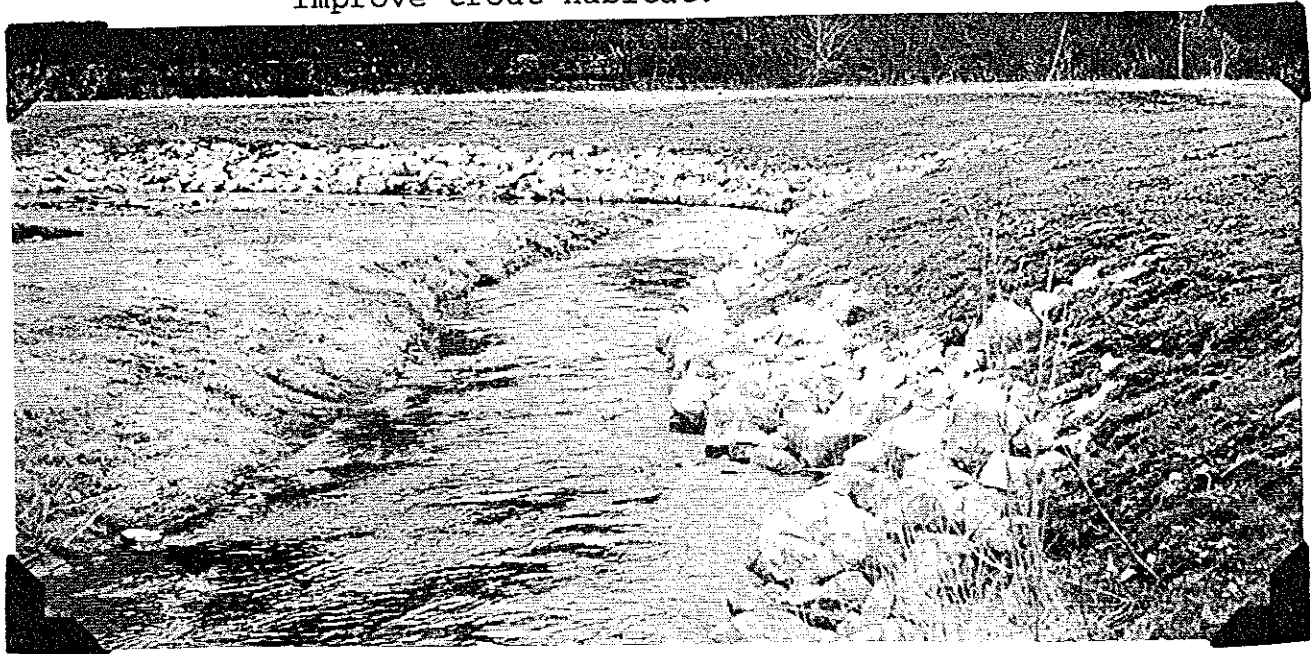
Not enough detailed studies exist to document exactly where individual techniques are most effective and why, but the following are some generalities:

I. The whole watershed should be considered to determine which areas need protection or rehabilitation along with riparian work. Fencing can be highly effective for improving trout habitat and increasing trout populations where grazing damage is the problem (Fig. 2). Riprap effectively reduces bank erosion and siltation, but its other physical and biological effects have not been well documented (Fig. 3).

Figure 2. Fencing along Mt. Vernon Creek revitalized streamside vegetation.



Figure 3. Rock riprap has been used on many southwestern Wisconsin streams to reduce bank erosion and improve trout habitat.



II. Brush removal can dramatically improve stream "fish-ability" and transform the dimensions of a channel that has become wide and shallow (Figs. 4, 5, and 6).

Figure 4. The Little Brule River before brush removal.



Figure 5. The Little Brule River one year after brush removal and brush bundle installation.



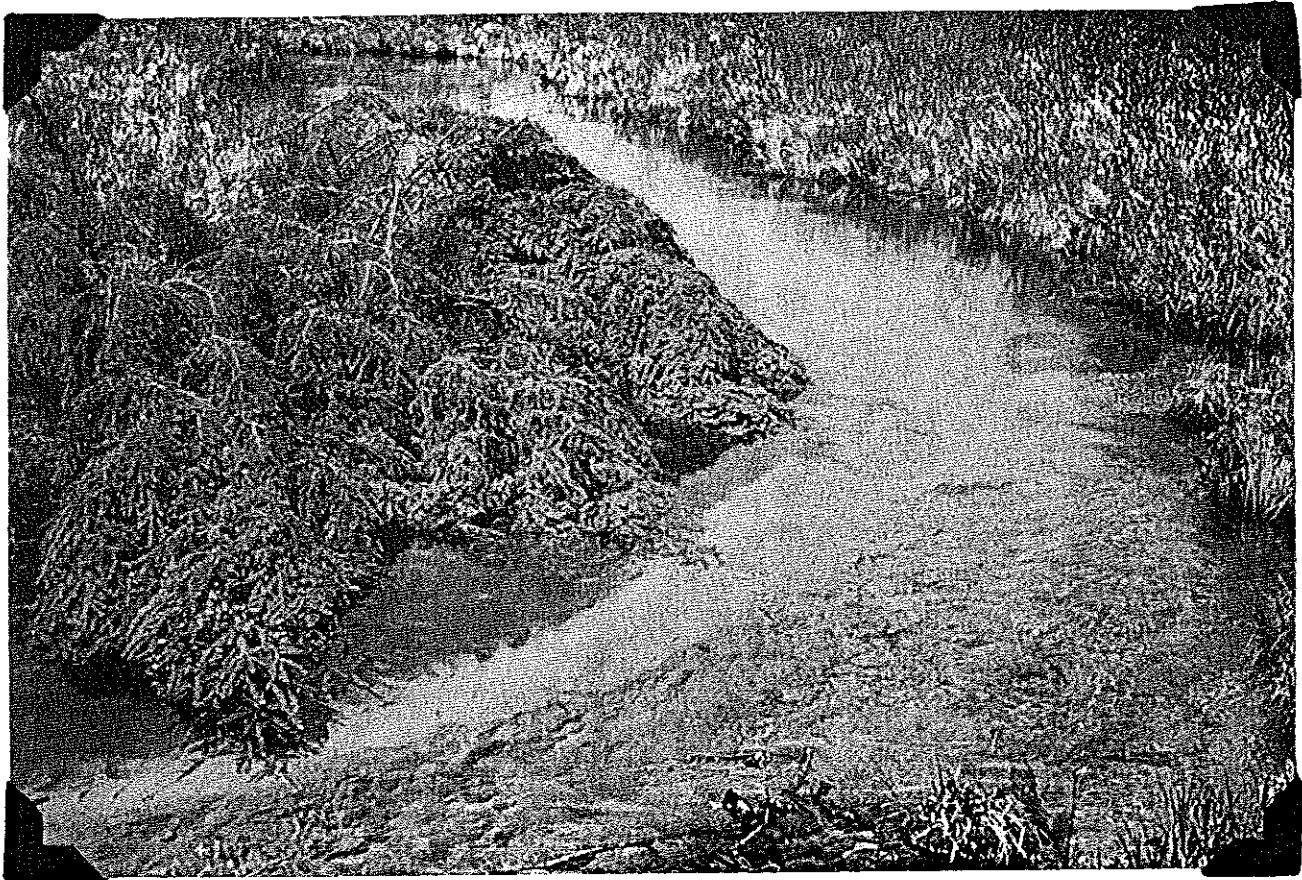
Figure 6. The Little Brule River two years after brush removal and brush bundle installation.



Brushing projects seldom improve trout populations. Increased harvests may more than offset increased trout-carrying capacities. The impacts of brushing projects on trout populations and harvests need more evaluation. Brush bundles most effectively improve trout habitat in low gradient, sandy, or soft-bottom streams with high sediment loads. NWD fisheries managers and technicians are successfully using large, matted, brush blocks rather than individual bundles.

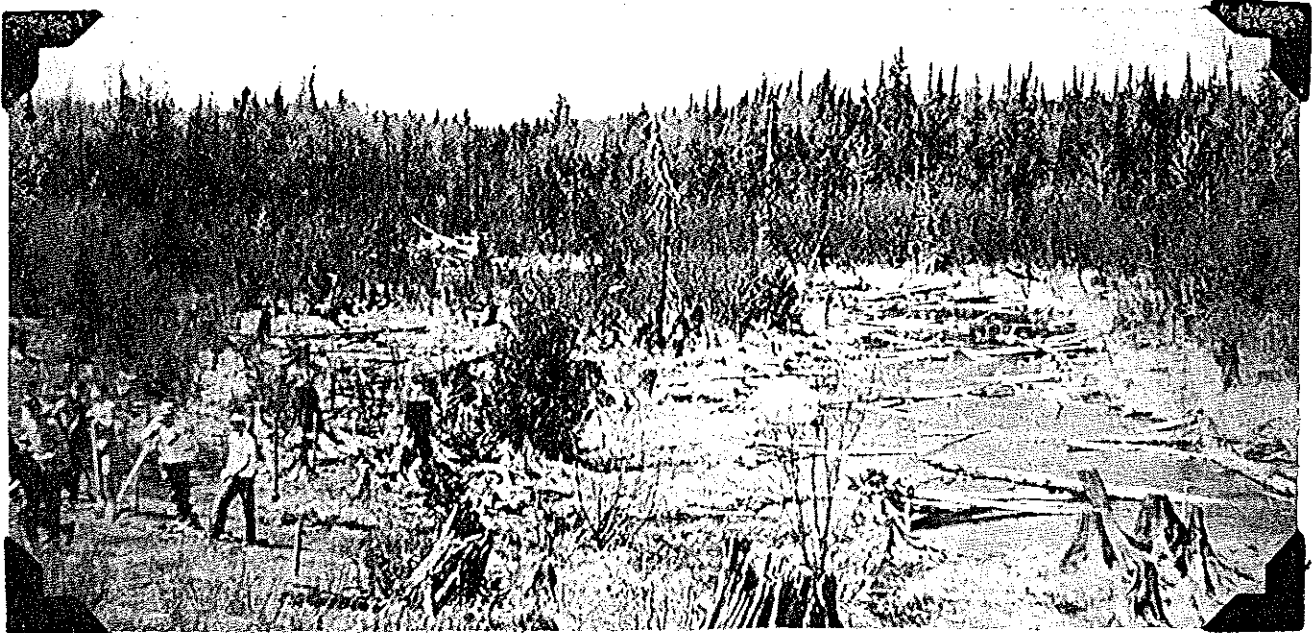
III. Debris removal and more frequent use of native streamside materials are potentially cost-effective improvement techniques (Fig. 7). These techniques should be encouraged and evaluated.

Figure 7. Bank-anchored conifer branches make an inexpensive wing deflector.



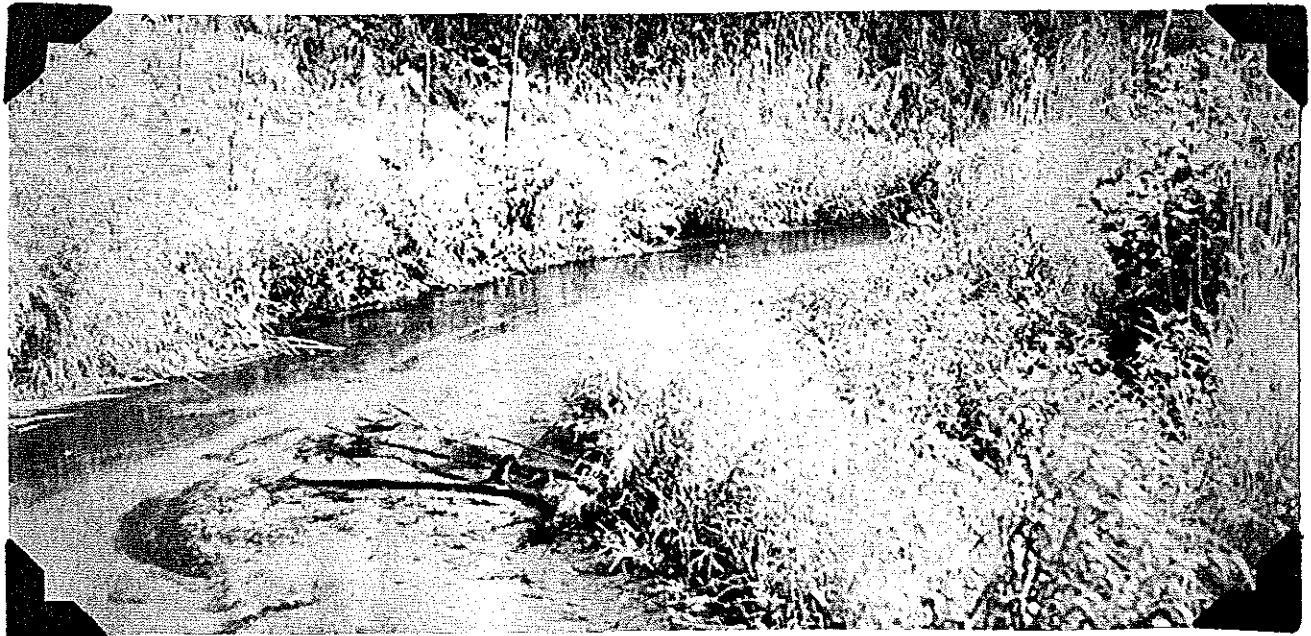
IV. Beaver control on habitat projects is an important priority (Fig. 8).

Figure 8. Beaver dam damage to trout stream habitat is evident after the pond has been drained.



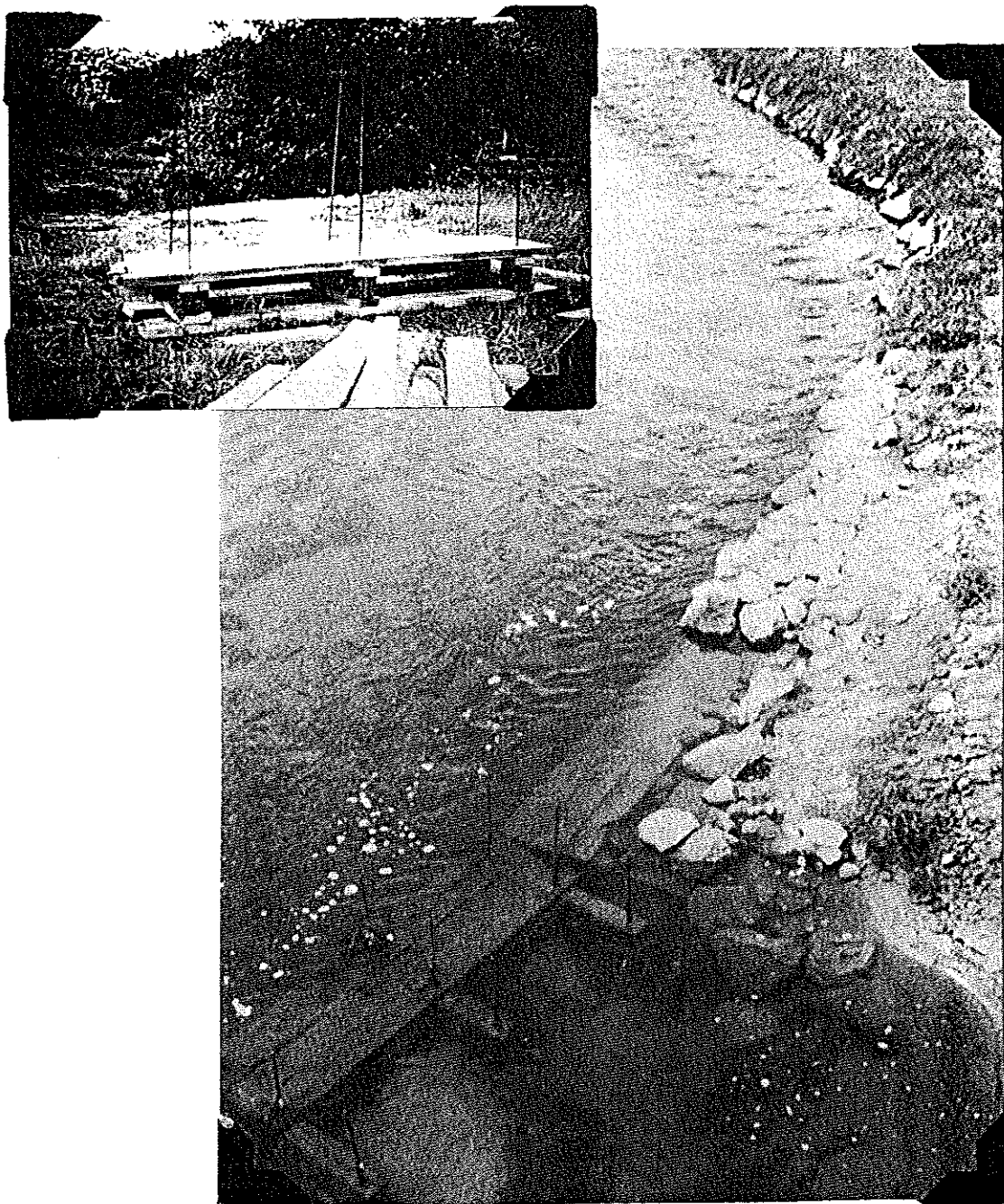
V. Wisconsin-style bank covers and wing deflectors consistently increase trout populations and improve trout fishing (Fig. 9). These techniques seem to favor brown trout when both brown and brook trout are present.

Figure 9. Typical bank covers and wing deflectors on the West Branch White River, Waushara County.



Dave Vetrano, La Crosse Area, has pioneered an effective bank cover modification, called lunger structures, for use in hard-bottom streams (Fig. 10).

Figure 10. Lunger structures are assembled on the bank before installation (left, inset). Various stages of installing lunger structures in Timber Coulee Creek (right, below).

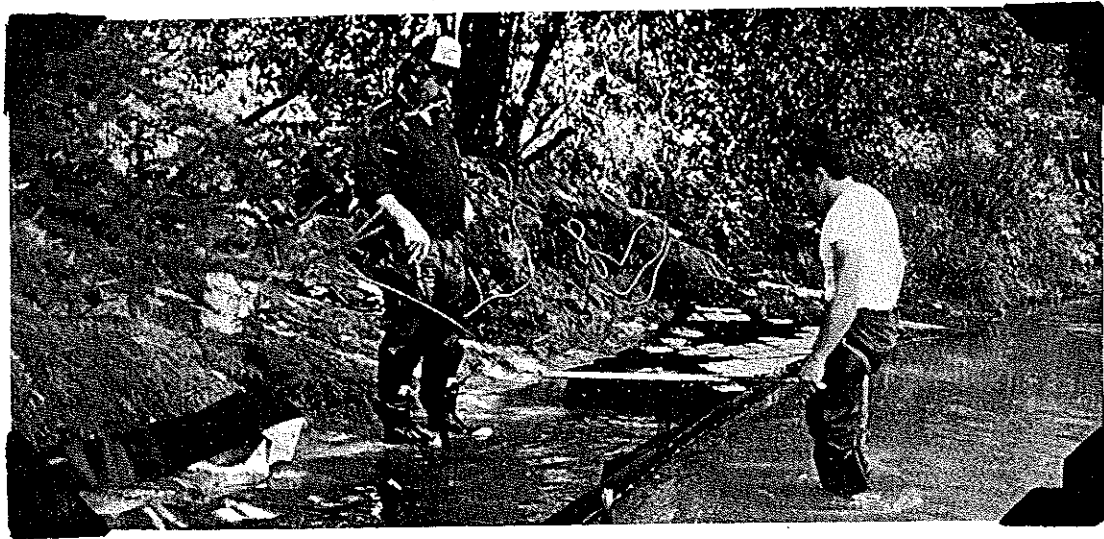


Jack Zimmermann and Scot Ironside, Wisconsin Rapids Area, first used sandbags (Fig. 12), and Terry Hupf, Wild Rose Habitat Management Station, first used Geoweb (Fig. 13) as innovative, cost effective alternatives for rock on bank covers and wing deflectors. Sandbags along exposed structure faces should be double-lined and stabilized with carbon black. Face logs will both protect exposed faces and improve aesthetics. The Wild Rose crew found that underlaying sandbags and Geoweb with a synthetic fabric, such as Typar, reduces erosion and sloughing.

Figure 11. Sandbags were first tested on streams in Adams County.



Figure 12. Geoweb being installed on the West Branch White River, Waushara County.



VI. Max Johnson's skyhook bank covers effectively change the structure of wide, shallow, hard-bottomed streams (Fig. 13). They may be useful for other stream types as well.

Figure 13. Skyhook bank covers are installed (top), back-filled (middle), and sodded (bottom).



VII. Rocks for mid-channel in-stream cover should complement stream size where possible. The Park Falls and Wisconsin Rapids areas are trying posts jettied at an angle in sand-bottomed streams -- and logs anchored in-stream or along the bank for large streams.

VIII. Most fisheries managers regard extensive development as more cost effective and aesthetically pleasing than intensive development. Extensive development encompasses larger areas -- for example, structures on every other bend or intermittent brushing. However, intensive bank covers and wing deflectors show the most consistent results (Fig. 14). Stream size affects development choices -- in particular, streams with a base flow of <5 cfs show questionable cost-benefit ratios for intensive work.

Figure 14. Intensive development typically features structures alternating from bank to bank.



IX. Spring-pond dredging is an effective technique, which provides long-term habitat improvement for a unique resource.

X. Fisheries managers and technicians statewide are using new techniques, structures, materials, and construction methods on a trial basis (Table 1). Habitat development work standards are seldom written down, and formal evaluations have not yet been completed to document many innovative procedures. Flexibility is essential, but most personnel would like some general guidelines, especially for training new technicians.

Table 1. New habitat improvement techniques by area.

Area	Technique	Formal Evaluation Done or Planned
Cumberland	brush mats	X
Park Falls	jettied-log retards subsurface-table structures	X
Oshkosh	synthetic materials self-operating cattle- watering pumps	X --
Dodgeville	native stream side materials high-gradient structures	X
La Crosse	lunker structures different seed mixtures electric fencing limited grazing	X -- -- X
Black River Falls	native stream side materials jettied half-logs	X X
Wisconsin Rapids	sandbags jettied-log retards	X X
Horicon	silt traps	X

Recommendations:

Guidelines -- The CRG and the CHS should update Technical Bulletin 39 and use it in training. The CHS should add guidelines for testing new techniques to the Fish Management Handbook.

Techniques -- Fisheries managers should continue to tailor techniques to specific streams. They, along with technicians, should work to develop new, low maintenance, fencing techniques, including electric fencing. Spring-pond dredging is also an effective and important technique. However, until recommendations become available to guide their use, marginal brushing and half-log projects should not be pursued.

Policy -- Fisheries managers should limit intensive work to larger streams with high trout production and angler use. They should propose special regulations where habitat improvement has increased fishing pressure and decreased quality.

Research

Most districts and areas use past research evaluations when planning new projects -- to select techniques and predict results. The Trout Habitat Development Program's future research needs are to:

- * Evaluate new techniques.
- * Develop and evaluate artificial spawning areas.
- * Describe brook and brown trout interactions in improved waters.
- * Determine the optimum intensity of habitat development.
- * Assess habitat development potential on Class II and III streams.
- * Predicate funding on technical review of project plans.

Other research needs, not directly related to the Trout Habitat Development Program, that fisheries managers mentioned are:

- * evaluating new trout strains
- * providing input to regulation changes
- * determining the impacts of chemical run-off on trout streams

Three of 10 areas and one of five districts favored having research personnel do most evaluations and creel surveys, but the assessment team does not agree.

Communications

Eight of 10 DNR area personnel and four of five district personnel interviewed thought that the Department does well in public communications. External communications about the Trout Habitat Development Program include: news releases, TV programs, public meetings, newsletters, videos, field trips, and personal contacts. TU and TSC, however, want the Department to provide them with more information about and involvement in the program. Some fisheries managers think that publicity can cause excess fishing pressure at project sites.

Seven of 10 DNR area personnel and four of five district personnel interviewed thought internal communications, especially concerning new techniques and evaluation results, should be improved. Procedures now used include: project reports, annual reports, district and statewide meetings, equipment and technique demonstrations, individual conversations, and including technicians during evaluation surveys.

Recommendations: The Department should continue an aggressive external communications program. It should include fishery area pamphlets and trout habitat videos to publicize the Trout Habitat Development Program. Fisheries managers should make more efforts to involve Conservation Congress delegates and TU chapters in project selection and inform them of results. Fisheries managers concerned about overharvest should propose regulation changes.

To improve internal communications:

- * The FM Bureau should circulate reports and evaluations to fisheries managers.
- * The FM Bureau should give feedback on reports and evaluations.
- * The FM Bureau and staff specialists should coordinate more district, interdistrict, and statewide meetings focused on habitat improvement.
- * The CRG and the CHS should revise Technical Bulletin 39.
- * The FM Bureau and districts should develop videos about new techniques.
- * Fisheries managers, technicians, and DFO personnel should work to improve communications.

PROGRAM ADMINISTRATION

The assessment team also reviewed how the Trout Habitat Development Program is being managed -- evaluating policy analysis, program guidelines, program organization, training, the future, public cooperation, and public input. Recommendations for future improvements are based on these evaluations.

Policy Analysis

Two of 10 area personnel and four of five district personnel interviewed wanted clearer, consolidated policies on equipment purchases, decentralized project review, and beaver control. Field personnel disagree about activities that should be funded with Trout Stamp revenues (Table 2).

Table 2. Activities that personnel thought should (yes) or should not (no) be funded with Trout Stamp revenues.

	Class II or III Stream with Improvement Potential	Equipment	Beaver Control	YCC	Surveys and Evaluations
NWD	--	--	--	--	--
Cumberland	--	--	--	--	--
Park Falls	--	yes	--	--	--
LMD	--	--	--	--	--
Oshkosh	--	--	--	--	yes
Marinette	--	--	--	--	no
SD	--	--	--	--	--
Horicon	--	--	--	--	--
Dodgeville	--	--	--	--	--
WD	--	yes	--	--	yes
La Crosse	yes	yes	--	--	--
Black River Falls	yes	yes	--	--	yes
NCD	--	--	--	no	--
Wisconsin Rapids	--	yes	yes	--	--
Woodruff	--	--	--	--	--

Recommendations: The CHS should clarify Trout Stamp policies by updating and compiling them for field personnel. He should also determine how statute changes could allow Trout Stamp funding of additional activities, including project planning, evaluations, creel surveys, and communicating results. Then, district supervisors and interest groups should reevaluate Trout Stamp revenue distribution.

Program Guidelines

Administrative program guidelines from the manual codes and the Fish Management Handbook cover project planning, environmental permits, equipment purchasing, equipment leasing, contracting, and project selection. In general, DNR personnel follow these guidelines. However, the Fish Management Handbook does not address decentralization, and the FM Bureau does not always receive the annual reports necessary for yearly summaries. Habitat projects regulated by Chapter 30 of the Wisconsin statutes no longer have to be reported to the Corps of Engineers.

Project plans in all areas that the assessment team visited were thorough and complete. Fisheries managers agreed that some planning documents are redundant or unnecessary. Specifically, project plans and comprehensive plans are not both necessary. Project application form number 3600-109 is not necessary. Work plan map details should be decided by project managers. Units of accomplishment and costs on project completion, report number 3600-111, should be coordinated with records that are most useful for summaries.

Numerous interdisciplinary approvals required in the NWD have delayed spring-pond dredging projects for over a year. Whereas, most districts permit through Water Management, the NWD also involves Environmental Impact, Solid Waste, Wildlife Management, Water Resources Management, Wastewater Management, the Corps of Engineers, and the State Historical and Archaeological Society. A potential future problem entails obtaining county permits for floodplain work.

Most areas have the equipment they need, but the La Crosse Area needs a large Caterpillar tractor and the Wisconsin Rapids Area needs an all-terrain vehicle and backhoe. Heavy Equipment Pool funds only replace equipment, and special purpose funding (such as Trout Stamp revenues) is not reimbursed for other uses of equipment put in the Pool. Sharing equipment could meet immediate needs, especially in the Wisconsin Rapids Area.

The consensus is that owning heavy equipment is better than leasing -- due to the scarcity of desired equipment for lease, the possible sale (to a third party) of leased equipment during the lease period, and the high cost of leasing vs. owning. WCD leasing experiences show that owning is better, especially when heavy equipment gets frequent use. Fisheries managers' success with contractors for rock hauling, fencing, and brushing work has varied.

Most areas are satisfied with present funding levels and permanent personnel. The La Crosse, Black River Falls, and Dodgeville areas said they could use more money -- but it would have to come from reductions to other areas. Interviewees suggested criteria to rank projects for funding. They most often mentioned fishing pressure, habitat status, improvement potential, and natural reproduction. In choosing priority streams, the fisheries managers most often stressed biological/physical criteria, whereas staff specialists emphasized human factors. Districts do not use consistent project-ranking criteria.

Recommendations: The CHS should update the Fish Management Handbook to streamline project planning and record-keeping for fisheries managers.

The NWD should streamline spring-pond dredging permit procedures. Fisheries managers should maintain contact with county planning departments to correct any potential county permit problems.

The CHS should analyze and clarify the present policies for purchasing heavy equipment. He should investigate ways (charge-backs or cost-sharing) to reimburse the Trout Stamp account when equipment purchased with Trout Stamp funds is used in the Heavy Equipment Pool. Staff specialists and fisheries managers should try more cost effective contracting.

The CHS should adjust funding to all districts so that staff specialists can increase funding in areas that need more habitat work and have shown positive results. All southwest areas have requested more funding, but only the La Crosse Area has shown positive results.

The CHS should organize a group of staff specialists and fisheries managers to develop priority-funding criteria for ranking district projects. The fish property ranking system (Rollins 1985) should have some application for ranking projects, with the best projects funded first and protected during budget shortages.

Program Organization

Within districts, organization and communication are working well. DFOs are effective in the NWD, WD, and LMD -- but areas located farthest from DFOs tend to get less assistance. Interdistrict loans of heavy equipment have been rare. Many areas do not know what equipment exists elsewhere in the state. The Wisconsin Rapids Area needs heavy equipment assistance.

Field personnel are satisfied with the decentralized annual budget planning system. Since 1983, the FM Bureau has notified the districts early in each calendar year of Trout Stamp fund block grants that will be available July 1 of the same year (Table 3). The districts then decide which projects get funded within the district. Districts are also responsible for keeping all planning documents.

Field personnel are unhappy with project allotment delays from Finance and with Walker System difficulties that include training, timeliness, accuracy, and closeouts. They also have project-planning problems because the fiscal year begins in the middle of the work season. Field personnel are spending an inordinate amount of time keeping budget accounts.

Table 3. Trout stamp project-funding allotments to districts by fiscal year (including early starts).

	1983	1984	1985	1986	1987
LMD	68,600	53,465	69,566	108,190	76,875
WD	85,210	85,320	143,618	123,703	87,900
SED	13,400	21,045	28,109	8,000	18,000
SD	36,608	55,000	91,900	86,640	82,500
NCD	91,500	45,418	58,000	84,221	87,139
NWD	88,565	61,805	85,050	72,298	82,248
TOTAL	383,883	322,053	476,243	482,052	434,662

Recommendations: Districts should share DFO experience and heavy equipment, including Fire Control equipment -- especially between Wisconsin Rapids and Wild Rose. Districts should develop long-range equipment-sharing plans. DFO should receive Workload Analysis credit for maintaining habitat program equipment. However, areas not effectively served by DFO need more personnel and equipment.

The CHS should publish clear guidelines specifying what has been decentralized. Decentralized budgets should continue in order to provide local control and simplify planning.

Fisheries managers should plan projects and request allotments during the fiscal year before the project is to begin.

Finance personnel should provide more Walker System training, improve the financial-tracking system so that it is more timely and accurate, and assure that closeouts are followed through by the district Supervisor of Services.

Training

All districts and areas are very interested in improving training related to the habitat program. The assessment team incorporated interviewees' ideas into several suggested training programs.

Recommendations: The CHS should oversee a committee -- of staff specialists, fisheries managers, technicians, and researchers -- to design and implement training programs, which would include:

- * Habitat crews from different districts working jointly on projects that feature new techniques, thus providing hands-on training for technicians.

- * The FM Bureau/districts presenting biennial habitat workshops for representatives from all districts, with both classroom and field sessions. Topics could include practical project design; special equipment and operation; new techniques, procedures, and materials; techniques for specific stream types; techniques from around the nation; the scientific basis of habitat development; practical tricks of the trade; and stream hydraulics.

- * Videos on new techniques, methods, materials, and equipment.

Future

The Trout Habitat Development Program's long-range future, based on resource needs, varies greatly by area. In some areas, the fisheries managers think that most major habitat projects will be completed in the next five to 10 years. The WD and NCD seem the least limited -- by the resource or by public ownership. Maintaining developed habitat will become a larger part of the program in all areas. Additional public land acquisitions will open more opportunities for habitat improvement.

Recommendations: The Trout Habitat Development Program should continue at present levels for at least 10 years with some funding adjustments among areas.

Public Cooperation

Cooperative projects are very successful in the Oshkosh, Marinette, Dodgeville, and La Crosse areas. Fisheries managers with successful projects: 1) have groups they can depend on, 2) are often a part of the group, and 3) have a positive attitude toward cooperation.

The Horicon and Wisconsin Rapids areas suggested actively encouraging habitat work on private land.

Recommendations: Fisheries managers should continue or expand cooperative projects. Where important trout resources are on private land, fisheries managers should provide technical advice and assistance to landowners who want to improve habitat, and encourage county or federal cost-sharing on such projects. The CHS should help to develop laws that would provide tax incentives for habitat improvement on private lands.

Public Input

Overall, the Trout Habitat Development Program enjoys user-group support. The small amount of opposition, from the early years of the Trout Stamp, has subsided. Now the Department receives a few complaints, mostly from local anglers who are dissatisfied with changing or calling attention to "their" stream.

TU supports the program with money, personnel, and education. TU members participating in the review commended the program. Delegates from chapters statewide at a state council meeting suggested ways the Department can improve public relations, what TU's role should be in the program, and how to improve habitat work.

TSC responded to the assessment team's request for written comments with four letters. TSC's main recommendations were to keep the public informed and work more with them, give a high priority to land acquisition and protection of springs, and keep habitat work simple and inexpensive.

Recommendations: The assessment team agrees with all the TU and TSC suggestions -- but thinks that the program is adequately funded for now, within the limitations of permanent DNR personnel.

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